

FILM-FORMING METHOD

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Abstract

PURPOSE: To form a good-quality film with high productivity by keeping a film-formed substrate in a water-vapor atmosphere under 0.1-10Torr pressure, while the temperature of the film-formed substrate is raised from room temperature to film-forming temperature, and thereafter by starting film forming in a film-forming method through an atomic layer deposition method.

CONSTITUTION: A rotator holding a sample S is placed in a reaction chamber 30 and rotated at 60rpm at the time of film forming or temperature rise. The inside of the reaction chamber 30 is exhausted of the air by a turbo-molecular pump VP to high vacuum. While the temperature of the reaction chamber rises from room temperature to 500 deg.C film-forming temperature, water vapor is caused to continue to flow through control valve V2 from an inlet N2 and adjusted by an orifice valve OF so that the pressure in the reaction chamber is 1Torr. In this case, Ar gas is used as the carrier gas of water vapor and the flow rate of the Ar gas is 200SCCM. At the time of film forming, the control valve V1 is opened and a fixed quantity of TMA gas 32 is introduced by the use of Ar gas as carrier gas. The flow rates of raw material gases are 100SCCM in the case of H₂O gas and 40SCCM in the case of TMA gas.